The Prevalence of Post Partum Depression and its Associated Risk Factors in Jeddah, Saudi Arabia: An Observational Study

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Abstract: ***Purpose:*** Post partum depression (PPD) has become a growing cause of concern for patients as well as healthcare providers all over the world. However, there exists a dearth of robust epidemiological data to determine the prevalence and risk factors associated with PPD among women in Saudi Arabia. The current study was a prospective questionnaire based epidemiological analysis of the prevalence and risk factors of PPD among Saudi women. ***Methods:*** A total of 280 mothers who delivered a live baby at least 2 weeks to a maximum of 1 year ago from the time of study participation were included. A p value of p value≤0.05 was used to determine the significance of results obtained. ***Results and Conclusions:*** The prevalence of PPD in the study sample was 23.9% which is suggestive of the high prevalence of PPD among Saudi women and warrants further investigation. Statistically significant risk factors associated with PPD were post partum blues, marital status, level of education, husband's job (p=0.001); monthly income (p=0.006), unplanned pregnancies (p=0.01), postpartum complications (p=0.05); pre-existing depression, use of anti depressants and lack of support from the spouse in baby care (p=0.001).

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Introduction:

Postpartum depression (PPD) has become a growing cause of concern for the medical fraternity all over the world. A wide range of prevalence estimates have been put forth in different regions of the world ranging from 7.6% to 39% varying as per the populations tested. (Sword W et al. 2011, Breese McCoy SJ et al. 2008, Chaaya M et al 2002, Gonidakis et al. 2008). As per a widely accepted definition of PPD put forth by the 'Diagnostic and Statistical Manual of Mental Disorders' (DSM), a patient of PPD presents with five or more of the following symptoms for a period of at least two weeks: insomnia/hypersomnia, psychomotor agitation or retardation, fatigue, appetite changes, feelings of hopelessness or guilt, decreased concentration, and suicidal thoughts or attempts. These symptoms may appear within 4 weeks post delivery and may continue for as long as 1 year. (DSM-IV-TR. 4th edition 2000)

In spite of the lack of clinical data to explain the etiology of PPD, it can be understood that PPD presents a multifactorial etiology. Significant hormonal changes at parturition, marital conflict (LM Wilson et al. 1996, Kumar R et al 1984) stressful events and episodes in one's life, (LM Wilson et al. 1996, Areias M et al. 1996), social and emotional insecurity which stems from weak social and emotional support systems, inadequate financial support, (LM Wilson et al. 1996, Brugha TS et al 1998), unplanned pregnancy, unemployment which can further compound the problem of financial and social insecurities (Warner r et al 1996), gestational diabetes (Kozhimannil KB et al. 2009), an infant with congenital anomalies (Rona J et al 1998) and a personal or family history of psychiatric disorders (Brugha TS et al 1998). In eastern communities, PPD is frequently associated with the gender of the newborn (Gao LL et al. 2009, Xiea R et al. 2007) and multiparity (Gurel and Gurel 2000)

The adverse effects of PPD take an emotional and psychological toll not only on the affected mother but also on the newborn and on the entire family at large. Clinical studies have demonstrated that PPD can weaken family ties and can have detrimental repercussions on the physical and mental development of the newborn. This can escalate the risk of behavioural problems in early childhood (Murray L et al. 1996, Stein A et al. 1991)

Saudi Arabia presents a diverse population with socioreligious characteristics peculiar to this region. Given this context, there is an unmet medical need to determine the prevalence of PPD in the Saudi population. Hitherto, very few such studies have been conducted within the Saudi community. Thus, the present study was designed to fulfil this unmet medical need of throwing light on the prevalence of

PPD in Saudi Arabia and is one of the first such epidemiological studies in the region.

Subjects and methods:

This was an observational, cross-sectional prospective study. The study included women within 2 months to one year of their postpartum period, attending the "Well Baby Clinic" at King Abdulaziz University hospital, for medical screening of their babies. The study was approved by the Research Ethics Committee of King Abdulaziz University and the study participants provided written and signed consent, upon receiving all necessary and relevant information regarding the nature and scope of the study

A total of 300 mothers consulting the Well Baby Clinic at King Abdul Aziz University Hospital and Al Zahra Dist PCU were invited to participate in the study. Of these, 280 mothers consented to participation. The 280 mothers who entered the study were required to provide their responses to a study questionnaire. Strict confidentiality of participant data was maintained and data collection took place from October 2012 to January 2013.

Inclusion criteria were: mothers who delivered a live baby at least 4 weeks to a maximum of 1 year ago were eligible for study participation.

Statistical Analysis

The following variables were assessed in the given study sample based on the responses received from the questionnaire based survey: Number of mothers suffering from depression, correlation between post partum blues (PPB) and PPD, the time of occurrence of PPD post delivery, correlation between factors like marital status, husband's job, mother's job, mother's education level, nationality of the couple and family monthly income with PPD; the association of factors related to pregnancy like systemic complications, mode of delivery and nature of pregnancy whether planned or unplanned with PPD were also studied. The study statistically analyzed the relationship of PPD with a personal or family history of depression, past use of anti depressants and the significance of receiving help from the spouse in managing the baby.

Statistical analyses were conducted on the entire study sample of 280 participants. For the purpose of consistency within the statistical analysis, the study participants were divided into 3 study groups namely; normal (mothers without any signs of depression), mild (those with mild PPD) and moderate (those with moderate PPD). The p value was used to determine the significance of the results obtained. p value ≤ 0.05 indicated strong evidence against the null hypothesis, which implied a statistically significant result. Scores obtained for every variable have been expressed as absolute numbers as well as percentages.

Results

Prevalence of depression within the study sample

A total of 280 mothers who had delivered a live baby 4 weeks to 1 year ago were evaluated during the course of the study. A total of 76.1% were normal and did not suffer from PPD whereas 23.9% mothers were affected by this disorder. A total of 17.5% and 6.4% mothers showed mild and moderate depression respectively. Table 1given below summarizes the study participants with respect to the presence or absence of depression and tabulates the severity of depression among mothers with PPD.

Table 1 Distribution of study groups according to depression (n = 280)

Group	Frequency	Percent
Normal	213	76.1 %
Mild	49	17.5%
Moderate	18	6.4 %
Total	280	100 %

Depression	Frequency	Percent
No	213	76.1 %
Yes	67	23.9 %

Table 2 Correlation between PPB [a] and PPD [b]

Postpartum blues	**Frequency**	**Percent**			
YES	135	48.2 %			
NO	145	51.8 %			
	Normal N =213 (N %)	**Total depression** Mild + moderate N = 67 (N %)	**Mild** N = 49 (N%)	**Moderate** N = 18 (N %)	**p value**
Post partum Blues	81 (38)	54 (80.6)	37(75.5)	17 (94.4)	0.001
Post partum depression that lasted >2 weeks	10(11.6)	43 (75.4)	29 (72.5)	14 (82.4)	0.001

[a] post partum blues; [b] post partum depression

Post partum Blues (PPB) and predisposition to PPD

Of the 280 mothers evaluated in the study, a total of 48.2% experienced PPB whereas 51.8% did not. Of the 67 mothers who were depressed, a total of 80.6% reported having PPBs. A total of 75.4% mothers with depression reported having PPBs lasting for 2 weeks or longer. The difference in the frequency of occurrence of PPBs between normal and depressed mothers was statistically significant (p=0.001). Summary provided in Table 2.

Correlating "time since delivery" with onset of PPD

Among the study participants who suffered from PPD, 41.3 % reported to have the onset of PPD like symptoms between 2—6 months post partum while only 14.3% had PPD during 9 to 12 months post partum. Table 3 given below provides details of onset of PPD with respect to time since delivery.

Table 3 Correlation between onset of PPD [a] and time since delivery

Time since delivery	Normal	Depression	p value
2 weeks – 2 months	75 (35.5 %)	18 (28.6 %)	
2 – 6 months	87 (41.2 %)	26 (41.3 %)	0.607
6 – 9 months	23 (10.9 %)	10 (15.9 %)	
9 – 12 months	26 (12.3 %)	9 (14.3 %)	

[a] post partum depression

Demographic conditions predisposing to PPD

A total of 61.2 % mothers with PPD were married, 29.8 % divorced and 4.6% were widows. Among mothers with PPD, 52.3 % received education upto middle/high school level, 22.4 % were only elementary graduate, 17.9 % had a bachelor's degree and 7.5 % were uneducated. With respect to their spouses, 84.8 % depressed mothers reported that their husbands were employed. A total of 69.1% mothers who had PPD reported their family income to be within the range of 3000 to 10, 000 Saudi Riyal per month.

A statistically significant difference was noted between the groups of normal and depressed mothers with respect to demographic factors like marital status, level of education and husband's job (p=0.001) and monthly income (p=0.006). Other demographic variables like nationality, mother's job and ownership of the house were not statistically significant

Table 4 Demographic Factors Associated with PPD [a]

Demographic variable (n)	Normal N =213 (N %)	Total depression Mild + moderate N = 67 (N %)	Mild N = 49 (N %)	Moderate N = 18 (N %)	p value
Nationality					
Saudi 204	159 (76.1)	45 (67.2)	33 (67.3)	12 (66.7)	0.351
Non Saudi 72	50 (23.9)	22 (32.8)	16 (32.7)	6 (33.3)	
Marital status					
Married 243	202 (94.8)	41 (61.2)	32 (65.3)	9 (50)	0.001
Divorced 24	4 (19)	20 (29.8)	13 (26.6)	7 (38.9)	
Widow 13	7 (3.35)	13 (4.6)	4 (8.2)	2 (11.1)	
Education					
Uneducated 7	2 (9)	5 (7.5)	3 (6.1)	2 (11.1)	
Elementary 38	23 (10.8)	15 (22.4)	10 (20.4)	5 (27.8)	0.001
Middle/High school 155	120 (56.5)	35 (52.3)	25 (51.1)	10 (55.6)	
Bachelor 79	67 (31.6)	12(17.9)	11 (22.4)	1 (5.6)	
Mother's job					
Housewife 209	154 (72.3)	55(82.1)	39 (79.6)	16 (88.9)	0.468
Employed 59	59 (27.2)	12(17.9)	10 (20.4)	2 (11.1)	
Husband's job					
Unemployed 10	3 (1.5)	7 (15.2)	5 (14.7)	2 (16.7)	0.001
Employed 233	194 (98.5)	39(84.8)	29 (85.3)	10 (83.3)	
Living					
Rent 94	70 (72.9)	24 (70.6)	17 (70.8)	7 (70)	0.965
Personal property 36	26 (27.1)	10 (29.4)	7 (29.2)	3 (30)	
Monthly income					0.006

Demographic variable (n)	Normal N =213 (N %)	Total depression Mild + moderate N = 67 (N %)	Mild N = 49 (N %)	Moderate N = 18 (N %)	p value
< 3000 39 3000-10,000 180 10,000 – 20,000 42 >20,000 2	24 (11.5) 142 (68.3) 40 (19.2) 2 (1)	15(27.3) 38 (69.1) 2 (3.6) 0 (0)	9 (22) 30 (57.1) 2 (4.4) 0 (0)	6 (42.9) 8 (57.1) 0 (0) 0 (0)	

[a] post partum depression

Table 5 Other Risk Factors Predisposing to PPD

Risk factors (n)	Normal N =213 (N %)	Total depression Mild+moderate N = 67 (N %)	Mild N = 49 (N %)	Moderate N = 18 (N %)	p value
Medical DM [b] 12 HTN [c] 17 Thyroid 8 Other 3	9 (25) 12(33.3) 7 (19.4) 3(8.3)	3 (25) 5 (41.7) 1 (8.3) 0 (0)	1 (14.3) 3 (42.9) 1 (14.3) 0 (0)	2 (40) 2 (40) 0 (0) 0 (0)	0.877
Cancer 8	5 (13.9)	3 (25)	2 (28.6)	1 (20)	
Planed pregnancy 43 **Yes** **No**	40 (18.8) 173(81.2)	3 (4.5) 63 (95.5)	3 (6.3) 45(39.2)	0 (0) 18(100)	0.016
Complicated 24 pregnancy	15 (7.1)	9 (13.4)\	5 (10.2)	4 (22.2)	0.083
Mode of delivery SVD [d] 179 Caesarean 99	136(64.5) 75 (35.5)	43 (64.2) 24 (35.8)	34 (69.4) 15 (30.6)	9 (50) 9 (50)	0.340
Caesarean Elective 24 ER [e] 76	22 (28.9) 54 (71.1)	2 (8.3) 22 (91.7)	2 (13.3) 13 (86.7)	0 (0) 9 (100)	0.091

Risk factors (n)	Normal N =213 (N %)	Total depression Mild+ moderate N = 67 (N %)	Mild N = 49 (N %)	Moderate N = 18 (N %)	p value
Delivery 38 complications	25 (11.7)	13 (19.4)	10 (20.4)	3(16.7)	0.258
Post partumcomplications 92	62 (29.1)	30 (44.8)	22 (44.9)	8 (44.4)	0.059
Fever 34 Bleeding 35 >3 days stay 15 Others 2	25 (44.6) 21(37.5) 9(16.11) 1 (1.8)	9 (30) 14 (46.7) 6 (20) 1 (3.3)	5 (22.7) 13 (59.1) 3(13.6) 1(4.5)	4 (50) 1) 12.5) 3 (37.5) 0 (0)	0.203
Baby status After discharge					
Left home 247 Stayed in nursery 21 Stayed in NICU 9	189(89.6) 15 (7.1) 7 (3.3)	58(87.9) 6 (9.1) 2 (3)	43 (87.8) 4 (8.2) 2 (4.1)	15 (88.2) 2 (11.8) 0 (0)	0.886

[a] PPD post partum depression; [b] DM diabetes mellitus;; [c] HTN hypertension; [d] SVD spontaneous vaginal delivery; [e] ER Emergency room; [f] NICU Neonatal intensive care unit

Table 6 Impact of previous depression, husband's attitude and events during pregnancy on the prevalence of PPD

Risk Factors (n)	Normal N =213 (N %)	Total depression Mild + moderate N = 67 (N %)	Mild N = 49 (N %)	Moderate N = 18 (N %)	P value
Previous depression 48	18 (8.5)	30 (44.8)	15 (30.6)	15 (83.3)	0.001
Previous depression with medications 24	4 (11.8)	20 (69)	8 (50)	12 (92.3)	0.001
Pervious PPD 75	32 (15.1)	43 (65.2)	26 (56.2)	17 (94.4)	00.1
Depression during pregnancy 71	27 (12.7)	44 (66.7)	27 (56.3)	17 (94.4)	0.001
Family history of Depression 34	22 (10.3)	12 (17.9)	8 (16.3)	4 (22.2)	0.485
Getting help with the baby 208	163 (76.9)	45 (68.2)	33 (68.8)	12 (66.7)	0.358
Not Getting help with the baby From husband 151	71 (34.3)	41 (73.2)	26(66.7)	15 (88.2)	0.001
Recent sad event during Pregnancy (death, divorce, 66 loss of job)	31 (14.7)	35 (52.2)	22(44.9)	13 (72.3)	0.001

Other known risk factors predisposing to PPD

A total of 95.5% mothers suffering from PPD reported that they had unplanned pregnancies (p=0.01). On the other hand, 44.8% of those suffering from PPD also reported postpartum complications (p=0.05). Other medical disorders, complicated pregnancy, mode of delivery, complicated delivery and status of baby after discharge were found to be insignificant. Table 5 given below shows details of these known risk factors of PPD as seen among the study groups.

Impact of previous depression, husband's attitude and events during pregnancy on the prevalence of PPD

Among the depressed mothers evaluated in the study, 44.8 % had a history of previous depression (p=0.001), 69 % mothers who were receiving anti depressants developed PPD (p=0.001), 56.3 % revealed a history of depression during pregnancy (p=0.001), 73.2 5 % reported not receiving any help from their husband's regarding the newborn (p=0.001) and 52.2 % reported a history of a sad event (death, divorce or loss of job) during pregnancy. A summary of these factors influencing the development of PPD as seen in the study groups has been provided below in Table 6.

Discussion:

This study represents one of the early epidemiological surveys conducted in Saudi Arabia to estimate the prevalence of PPD in this region. Saudi Arabia is a region with demographic, social and economic diversities and epidemiological patterns of diseases in this area reveal an interesting picture. Given this background, the current epidemiological study can be considered as a step ahead in exploring the epidemiology of psychological disorders like PPD in this region.

The study data estimated the prevalence of PPD to be 23.9%. This falls within the wide range of global prevalence estimated to range between 7.6 to 39%; as per previous studies conducted in different parts of the world (Sword W et al. 2011, Breese McCoy SJ et al. 2008, Chaaya M et al 2002, Gonidakis et al. 2008).

The association between PPB and PPD is well known. However, previous studies have shown that a relatively lesser number of women (approximately 15-20%) who suffer from PPB develop PPD at a later stage (Narasimhaiah G Manjunath et al. 2011, Deirdre Ryan et al. 2005, Henshaw C et al. 2004, Janine Castle 2008). In sharp contrast to this, a notable majority of 80.6% women suffering from PPD reported having PPBs from a few days postpartum up to 2 – 4 weeks. This leads to the understanding that perhaps the presence of PPB can be regarded as an important and independent risk factor in the development of PPB.

The DSM IV mentions that the onset of PPD is generally within 4 weeks post partum. However, epidemiological studies have provided varying estimates of onset of PPD. Some epidemiological studies have stated that the time frame with the highest risk of developing PPD is the first 3 months post partum (O'Hara MW et al. 1984, Stuart S et al. 1998, Cooper P et al. 1997, Christa Andrews-Fike 1999). In the current study, 41.3% depressed mothers reported the onset of PPD between 2-6 months post partum whereas 14.3% reported it between 9-12 months post partum. This finding is similar to the observations of other studies which have stated that the onset of PPD occurs most commonly during the first 3 months post partum; though a few late onset cases may be seen as late as 1 year post partum (Christa Andrews-Fike 1999).

Demographic features like the emotional and social status of one's married life, level of education, and the spouse's employment had a statistically significant bearing on the development of PPD among depressed mothers in this study (p=0.001). The monthly income of the family also came across as a statistically significant factor predisposing to PPD (p=0.006). This depicts that the development of PPD is perhaps closely related to the financial and emotional insecurities of the mother. A similar conclusion has been drawn by previous studies in this regard [6-10]. Besides, unplanned pregnancies (p=0.01) and post partum complications (p=0.05) also emerged as statistically significant independent risk factors predisposing to PPD, in the current study. This finding too is in harmony with results of previous studies (Brugha TS et al 1998, Warner r et al 1996, Kozhimannil KB et al. 2009, Rona J et al 1998).

It is noteworthy that a history of depression prior to pregnancy, depression ongoing during pregnancy, a history of use of anti depressant medications, depressing events occuring during pregnancy and lack of moral and emotional support in baby care from the husband; were also found to be statistically significant risk factors of PPD ((p=0.001). Similar findings have been put forth by previous studies which support the fact that pre-existing depression increases the risk of PPD manifold (O'Hara MW 1995, Garvey MJ et al. 1983)

The results of the current study are indicative of the high prevalence of PPD among Saudi women. The results are certainly an eye opener and a cause of medical and social concern. The epidemiology, etiology and clinical interventions for PPD among the Saudi population should be further investigated in larger, multicentric, studies conducted over a longer period of time.

Conclusion

The study revealed a notably high prevalence of PPD among Saudi women (23.9%). Post partum blues; financial, marital and emotional bereavement and insecurities of the mother, unplanned pregnancies, postpartum complications, history of pre-existing depression and use of anti depressants and lack of support from the spouse in baby care are significant risk factors predisposing to PPD.

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